

INTERNATIONAL DEVELOPMENT IN FOCUS

# **Port Development and Competition in East and Southern Africa**

**Prospects and Challenges**

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# Foreword

International trade patterns have changed markedly in recent years, in terms of both trade partners and volumes. Over the past decade, Africa's trade has slowly trended away from developed countries and toward emerging economies. Whereas Western European countries accounted for the bulk of Africa's trade in the late 20th century, countries like China, India, Indonesia, Russia, and Turkey have since grown in importance as export destinations for the resource-rich economies. Emerging economies have also become origins of a significant share of imports for nearly all African countries, the total trade of the latter with China increasing twenty-fold in the last two decades. The changing trade relationships and needs require that Africa's external transport connections evolve as well.

The changing structure and intensity of international trade is increasing the region's infrastructure needs and demand for more specialized transport and logistics services at the maritime gateways and on the key trading corridors: Africa has 16 landlocked developing countries, which represent 30 percent of the region's population, and which are entirely dependent on the key trading corridors through neighbors for access to the sea. Trade costs for these countries tend to exceed the global average 3 to 4 times. In some of these countries, transport costs represent upwards of a quarter of the final price of goods, including crucial production inputs such as fertilizer and fuel. Connections to gateway ports are key to allow these countries to engage in global trade and value chains. In other words, East and Southern Africa's ports are the nodes of entry not only to their coastal host countries but also the landlocked hinterland. Investments in ports will have implications far beyond the port gates. Against this backdrop, the existing port facilities and current operational practices in the East and Southern Africa region are inadequate, with insufficient capacity to serve not only their coastal countries, but also the hinterland of landlocked nations. The visible result has been high ship waiting times, high berth occupancies, congestion on both the land and maritime side, and increased costs.

East and Southern Africa now stand at a pivotal moment. The accelerating growth of its consumer class is rapidly increasing the demand for imported goods and, hence, the need for improvements in containerized cargo transport services that would allow delivering the goods efficiently and at minimum cost. New discoveries of oil and gas resources have the potential to transform regional

markets, provide significant revenues for government, and improve living standards. They will also require further investment in infrastructure capacity to support exploitation, some of which might be quite urgent. However, this growth and prosperity will require not only new infrastructure on both the maritime and landside, but also policy reforms, the greater use of specialized private operators, and the leveraging of private investment, both to deliver transport infrastructure and to ensure its efficient use.

This book assesses the capacity expansion needs, the operating efficiency, and the landside access gaps of the fifteen main ports in East and Southern Africa within the context of these broader global and regional trends. In doing so, it provides detailed policy recommendations for each of the ports regarding the needed port and access infrastructure, the port sector regulations, and the institutional and management approaches to port operation and development.

The World Bank looks forward to working closely with member countries, other development partners, and the private sector to deliver solutions and results that will help bring the region's development vision to life.

**Guangzhe Chen**

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The World Bank

# Foreword

Over the last two decades, the countries of East and Southern Africa (ESA) have taken concrete steps to improve the efficiency of their transport networks and to reduce the costs of trade. These actions have included significant physical investment in the main regional corridors, increased attention to intermodal connectivity, and implementation of trade facilitation measures to enable cross-border trade and to smooth the intraregional movement of labor. These efforts have also led to improvements in the region's performance as evaluated by the international Logistics Performance Index, with most ESA countries climbing in the ranking relative to their global peers. Today, the region is better connected and more resilient to economic shocks than it was at the turn of the century. Improved connectivity and reduced trade costs have contributed to a rapid rise in the consumer class, reaching 8–10 million in Ethiopia, Kenya, and Tanzania, and surpassing 35 million in South Africa.

The positive developments notwithstanding, the region's growth and progress in poverty reduction going forward will require not only significant investment in infrastructure, including in roads, rail, sea ports, and logistics platforms. It will also necessitate bold policy reforms that promote the efficiency of transport service provision, improve transport safety, and ensure that improved connectivity helps boost firm productivity, country competitiveness, and human capital, while helping reduce existing spatial economic imbalances. Countries would have to continue making progress toward economic integration and allowing people to get the full benefits of economic integration. Infrastructure connectivity is critical, but by no means sufficient, as it needs to be accompanied by “soft” policy and regulatory reforms, creation of value chains, and trade facilitation measures.

Despite impressive reductions in the average poverty rates, Sub-Saharan Africa (SSA) remains home to more than half of the world's poor, exceeding 410 million, and in individual countries the inequality between the bottom 40 percent and the rest has grown in recent years. Just five ESA countries alone — Ethiopia, Kenya, Madagascar, Mozambique, and Tanzania — jointly represent about a quarter of SSA's poor population. Employment in low-productivity, informal agricultural activities remains dominant in much of the region, the overall share of agricultural employment remaining at about 30 percent.

Progress in poverty reduction in ESA is threatened by several factors, some internal and some external to the region. Investment remains low and the investment climate is still weak. Recent global trends, such as the projected softening in the global economic growth, are raising vulnerabilities; commodity prices remain volatile; and global financial conditions are tightening, especially in emerging markets and low-income countries.

A critical area for the future growth of the region – and one where transformation from the *status quo* will be required – concerns the availability of infrastructure financing. One solution to addressing the region’s growing infrastructure needs, at least in part, lies in bringing in private capital. To accelerate this much needed transition, the World Bank Group (WBG) has embraced Maximizing Finance for Development (MFD) as its approach to helping countries systematically leverage all sources of finance, expertise, and solutions to support sustainable growth. Of course, such an approach requires careful attention to country macroeconomic stability and debt levels, and to the overall investment climate needed to encourage private investment.

Consistent with the MFD approach, the new Africa Strategy, endorsed by the World Bank Board in 2019, aims to accelerate poverty reduction and increase shared prosperity in SSA through three main avenues. First, it aims to create sustainable and inclusive growth, including through digital transformation and maximizing private finance. Second, the Strategy intends to strengthen the region’s human capital. And finally, it aspires to build resilience to fragility and climate change. With these objectives in mind, the WBG is providing assistance to the region’s governments in implementing important structural reforms, including in trade policy and regulation, competition policy, and investment policy. Regional integration remains a key priority for the WBG and is an important way to increase trade, diversify economies, and address diseconomies of scale emerging from small domestic markets. All of these are necessary for creating the jobs that will be needed to fuel growth over the coming years and decades.

This timely study outlines recommendations for the fifteen main ports on the ESA coastline to guide decision making and policy in port capacity expansion, hinterland connectivity, and leveraging of private investment and digital technologies to enhance operational efficiency and maximize the impact of ports on boosting economic growth and reducing vulnerabilities. Thus, the objectives of this analytical work are directly aligned with the pillars of the Africa Strategy and the increasing centrality of MFD in the World Bank Group’s country and sector strategies.

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# Abbreviations

2PL	second-party logistics
3PL	third-party logistics
4PL	fourth-party logistics
APMF	Agence Portuaire Maritime et Fluviale (Maritime and River Port Authority of Madagascar)
BCP	border crossing point
BPA	Berbera Port Authority
CAGR	compound annual growth rate
CCECC	China Civil Engineering Construction Corporation
CD	chart datum
CdM	Cornelder de Moçambique
CDN	Corredor de Desenvolvimento do Norte (Northern Corridor Development Authority)
CFM	Portos e Caminhos de Ferro de Moçambique (Mozambican Ports and Railways Authority)
CHEC	China Harbour Engineering Company
CMPH	China Merchants Port Holdings
DPFZA	Djibouti Ports & Free Zones Authority
DWT	deadweight tonnage
ESA	East and Southern Africa
eTKM	eTheKwini Municipality (Durban)
GDP	gross domestic product
GRT	gross registered tonnage
GT	gross tonnage
ICD	inland container depot
IMF	International Monetary Fund
ISO	International Organization for Standardization
IT	information technology
KPA	Kenya Ports Authority
LAPSSET	Lamu Port–South Sudan–Ethiopia Transport
LCDA	LAPSSET Corridor Development Authority
LOA	length overall

LSBCI	Liner Shipping Bilateral Connectivity Index
MPA	Mauritius Ports Authority
MPDC	Maputo Port Development Company
P/TOS	port/terminal operating system
PA	port authority
PCS	port community system
PdN	Portos do Norte (Ports of the North, Nacala)
PDSA	Port de Djibouti S.A.
PMAESA	Port Management Association of Eastern and Southern Africa
PPP	public-private partnership
R&D	research and development
RTG	rubber-tired gantry crane
SCA2D	Stratégie de Croissance Accélérée de Développement Durable (Accelerated Sustainable Development Growth Strategy)
SCP	Société Comorienne des Ports (Comoros Port Authority)
SGR	standard gauge railway
SPAT	Société du Port à Gestion Autonome de Toamasina (Autonomous Port Authority of Toamasina)
SSA	Sub-Saharan Africa
STS	ship-to-shore
TEMPI	Transnet eTheKwini Municipality Planning Initiative
TEU	twenty-foot equivalent unit
TICTS	Tanzania International Container Terminal Services
TNPA	Transnet National Ports Authority
TO	terminal operator
TPA	Tanzania Ports Authority
TPT	Transnet Port Terminals
ULCC	ultra-large container carrier
ULCS	ultra-large container ship
UNCTAD	United Nations Conference on Trade and Development
ZMA	Zanzibar Maritime Authority
ZPC	Zanzibar Ports Corporation

# Overview

Between 2005 and 2015, the countries of Sub-Saharan Africa displayed strong and consistent economic performance, averaging gross domestic product (GDP) growth of 5 percent per year, despite the global financial crisis in 2009. Growth slowed notably in 2015–16, averaging about 1.2 percent, and recovery continued to be modest in 2017, with overall regional growth at 2.5 percent and varying performance across the region’s countries. Robust growth was observed in non-resource-intensive countries such as Ethiopia, Kenya, Rwanda, and Tanzania in contrast to Angola, Nigeria, and South Africa (World Bank 2017).

In East and Southern Africa (ESA), freight volumes have been growing at 9 percent per year through some of the key ports, with transit consignments to land-locked countries growing at 16.5 percent per year until relatively recently. These growth trends are expected to continue in the medium term.

Against this backdrop, many of the main ports have struggled to meet the challenge of current growth, let alone that projected over the medium to long term. The result in many cases has been high ship waiting times, high berth occupancies, and congestion on both the land and maritime side, among other things; all contributing to increased transport costs.

The response has seen all the ESA ports either implementing or planning significant capacity enhancements, primarily relying on public investment. In addition to the proposals to develop existing ports, there are also plans—at various stages of preparation and implementation—to develop new greenfield ports at Lamu in Kenya, now under construction, and Bagamoyo in Tanzania, now in the planning stage.

This report presents the findings from a number of separate strands of work, which collectively seek to answer the following questions: (1) Are the proposed capacity enhancements justified by current and projected demand?; (2) What is the current performance of the ports, relative to regional and global peers, in terms of spatial and operating efficiency?; (3) Which ports are likely to become regional hubs, and which are more likely to become subregional or feeder ports?; (4) Is the current approach to increasing capacity—a balance between maritime

capacity enhancement and rectifying other impediments to port efficiency—appropriate in the ESA subregion?; and (5) What are the other necessary actions for the main ports<sup>1</sup> from an institutional, policy, and operational perspective to ensure the ports deliver what is needed to enable local and regional economic development and trade?

## THE MAIN FINDINGS

**The study confirms the need to increase maritime capacity in the ports of ESA, but with certain caveats:** Overall container demand in the fifteen ESA ports is predicted to begin exceeding total current capacity by between 2025 and 2030; capacity gaps are already visible in some ports in terms of dry bulk handling; and demand for liquid bulk handling is expected to exceed capacity in a number of ports by 2020–25.

However, the development plans and subsequent expansion of the individual ports, and the actual and proposed development of greenfield ports, need to reflect the trends in the shipping industry, the potential role of the port relative to both existing and new competing ports, the spatial and operating efficiency of the port, and landside access issues.

**Not every port will have the opportunity to develop as a regional hub,** with geographical location and proximity to main shipping routes, available draft, and appropriate infrastructure being crucial considerations. Based on the analysis undertaken in this study, and the ongoing port and hinterland development, a more likely scenario for ESA is for Durban and Djibouti to emerge as the regional hubs.

The development of any port as a regional hub port in ESA faces several challenges: First, many of the ports serve only one transport corridor, so diversion from other corridors is difficult; second, the movement toward a hub-and-spoke system is slightly slower in ESA than in West Africa; third, many ports simply lack the necessary attributes to develop into a hub; and finally, some investment appears to be diverted to less-viable port facilities.

**There is a need to improve the operating efficiency in all the ports.** The analysis shows that the average technical efficiency of container terminal operations in the 10 ports (Beira, Dar es Salaam, Durban, East London, Maputo, Mombasa, Nacala, Port Louis, Djibouti, Toamasina) falls in a range of 44–53 percent for the 2000–10 data set in the defined sample of matching ports.<sup>2</sup> In other words, the ports in ESA are less than half as productive as the most efficient ports in the matched data set of similar ports across the world, in terms of efficiency of container-handling operations.

The ranking is constant, more or less, across the different models: Durban, Mombasa, Dar es Salaam, and Port Sudan are the most efficient ports in terms of container handling; Beira, East London, and Nacala are the least efficient. Globally, the port of Mombasa, based on this data set, is the most technically efficient port, and ranks as the 43rd most efficient container port in the defined sample of matched ports. Dar es Salaam and Durban follow at 64th and 70th positions, respectively, for container operations. These are the rankings in the sample of 110 matched ports of similar size and scope, not the ranking globally among all ports. All the ESA ports would rank well below the most efficient ports in the world.

The analysis also reveals that the main factors that contribute to driving higher efficiency in container handling in these ports are (1) the presence of specialist international terminal operator(s); (2) the existence of an effective rail connection to the port; (3) the existence of transshipment traffic; (4) a higher score on the Connectivity Index; and (5) reduced vessel time at berth. Not all ports meet the five criteria (Mombasa and Durban, for instance, are publicly operated); if the aspiration is to make them globally competitive, it will require movement on all five factors.

**There is a need for greater integration in the supply chain.** The global port industry has for some time been impacted by vertical and horizontal integration among producers (port operators and port authorities), terminal operators, shipping lines, and land transport.

Within the maritime industry, a key example of horizontal integration is in container shipping alliances, where shipping lines pool their respective fleets and move containers on one another's behalf, to extend their service offerings and geographic coverage in a manner analogous to code-sharing by the airlines. In the port subsector, the most important trend is the development of global specialist terminal operators that operate container terminals internationally, with enhanced cooperation between the respective ports. In some contexts, this can give rise to concerns over anticompetitive practices (World Bank 2015).

An example of vertical integration by public-sector entities in the port sector concerns the role of the port authority (PA) or terminal operator (TO) as cluster manager. In this role, PAs or TOs are involved in the development or operation of rail and road hinterland links via logistics platforms, to offer efficient and reliable transport services to shippers and ensure sufficient flows of goods through the port (Baccelli, Percoco, and Tedeschi 2008).

In the ESA port sector, vertical integration is visible, but to a lesser extent than it is in the more economically developed countries. Also, vertical integration in some countries in the project region is driven by the public sector authorities themselves, while in developed countries these trends are usually driven by the private sector. The degree of vertical integration is strongest in the ports of Djibouti, Mombasa, Toamasina, Port Louis, Durban, and the three Mozambican ports.

**Improving landside access is crucial:** One challenge faced by all the ESA ports, almost without exception, is the need to improve landside access. In the case of many, the issue of landside access is more important than improving maritime access and capacity. There are three main constraints: (1) limited or no intermodality; (2) limitation in the quality of the road infrastructure, and delays at the border-crossing points; and (3) congestion at the port-city interface.

**Limited or no intermodality:** Current connectivity from ESA's ports to hinterland destinations still depends primarily on a road network of variable quality and coverage. Despite this, road transport moves a majority of cargo to and from the region's ports: More than 70 percent of all cargo to or from the ports is carried by road transport. If one excludes South Africa, the figure increases to 90 percent. A significant part of the ESA railway network is in a poor state, and most lines are single-track and not electrified—the exception being South Africa.

**Roads and borders:** While the core regional road network on the main trading corridors is in good to fair condition, there are still some sections in poor condition, and some with missing links. But a major issue across the region, with

the exception of South Africa, is the efficacy and the efficiency of road maintenance. Despite substantial investments in road infrastructure in recent years, limitations in management, poor enforcement of axle-load restrictions, inadequate maintenance practices, and insufficient resources continue to lead to premature deterioration of the roads and increased transport costs.

Also, the border crossing points, despite improvements in many locations, remain significant points of delays and additional costs: An analysis of the road corridor on the Southern North-South Corridor revealed—for the movement of a consignment between Durban and Lusaka—border posts were responsible for 15 percent of total monetary costs (comprising 1 percent, 1 percent, and 13 percent) and 37 percent of total travel time (comprising 13 percent, 11 percent, and 13 percent) through Beitbridge, Chirundu, and Kasumbalesa, respectively.

**The port-city interface:** The final major challenge for many of the ESA ports in terms of land access is what is known as the port-city interface. The evolution and development of ports create a number of benefits for their host cities and countries. Ports and their related services and industries create substantial employment for local workers. As port traffic has grown, port-related labor demand has increased, usually unskilled and from the immediate vicinity of the port. While increased containerization and mechanization in a port has diminished the number of unskilled cargo handlers, generally ports remain significant local employers at the heart of an economic cluster.

Despite the benefits, the negative impacts of ports on cities—both direct and indirect—are substantial. These externalities range from environmental issues (such as air emissions, water pollution, or soil pollution) to congestion issues and safety risks. Port-induced city congestion is the most notable negative externality in and around the ESA ports. Many cities grew around the existing port, with roads running through the city centers and suburbs, and few have successfully addressed these concerns in a substantive manner.

**There is a need to improve stakeholder engagement in many ports.** The relationship between the port and its stakeholders—including, but not only, the users of the port—is an essential component of good management and operation. This group includes the users of the port, the other public agencies involved in the port, and the authorities responsible for the land areas outside the port. For example, if there is no collaborative dialogue with the revenue authority, spatial and operating efficiency could be impeded. Currently, the dialogue is not equally strong and formalized across the ESA ports; and in some it is ad hoc and informal.

**There is a need to introduce modern management systems.** Despite the importance of comprehensive information management systems, in a number of the ports the current modus operandi in the terminals is characterized by operational and administrative procedures for which approval and information exchange is carried out on paper, in offices at multiple locations inside the port operations area. Also, imported cargo in cars and trucks is subject to customs inspection inside the operational area of the port. Agents, customs officers, and truck drivers walk between offices inside the operations area, adding to safety and security risks. All of this obstructs efficient cargo and equipment flow, and results in operational delays.

Although many ports in the ESA region provide services that could be part of a port community system (PCS), such as single-window, tracking-tracing, automatic data interchanges, or truck appointment systems, there are only

three that operate a full PCS: Port Louis, Durban, and East London. In some cases, specialist terminal operators have invested in terminal operating systems and gate management systems. In other ports, there is little movement toward a substantive PCS, with some terminals operated by the port authority still running inefficient, paper-based PA/TO systems, such as at the publicly operated berths in Dar es Salaam port.

**There is also an overreliance on public investment in port development and expansion.** Ports require considerable infrastructure in order to fulfill their function and compete successfully. The necessary infrastructure is large, lumpy in an economic sense, and expensive. Traditionally, the development of ports has relied on public investment, which remains the predominant approach in the ESA countries. However, elsewhere in the world, this reliance on the public purse changed in the 1980s, with private investment being used for equipment and the initial superstructure, and more recently for financing the construction of entire terminals, including quay walls, land reclamation, and dredging, along with the superstructure.

**There is another advantage to utilizing the experience of specialist terminal operators.** Ports and terminals benefit from the participation of private terminal operators, not only in terms of leveraging private capital and reducing the level of necessary public investment, but also in the transfer of expertise, managerial incentives, and technologies. A transaction can be designed to protect the strategic interests of a country, but a specialist operator can also provide a port with a competitive edge relative to regional peers. Many ports in West Africa show the efficiency improvements of moving to a landlord model and bringing in a specialist terminal operator.

**Finally, the institutional framework for all the ports needs strengthening to ensure the most efficient use of the infrastructure.** The primary weakness in all the ESA countries, with the singular exception of South Africa, is the lack of an independent regulator with sufficient resources and capacity to ensure effective auditing, monitoring, and tariff regulation in the port sector. For example, in seven of the countries, the PAs regulate themselves in terms of the scale and structure of tariffs (Djibouti, Kenya, Zanzibar in Tanzania, the Comoros, Madagascar, Mauritius, Mozambique).

Also, despite the explicit objective of a number of governments to move toward the landlord port management model, in many countries in the region, port operations are still carried out in whole or in part by the PAs themselves, using their own employees (Kenya, Tanzania in part, Zanzibar), or by publicly owned companies working as operators (Mauritius, South Africa). While neither model is ideal, the latter, at least, offers the advantage of transparency with respect to the profit and costs of port operations, and the avoidance of implicit cross-subsidization.

Increasing maritime capacity without adequately considering these latter issues will inhibit the realization of the full benefit from any maritime capacity enhancement and also constrain the efficiency of a port.

## NOTES

1. The report covers the main ports in ESA: Djibouti, Berbera, Lamu, Mombasa, Dar es Salaam, Zanzibar, Nacala, Maputo, Beira, Durban, Port Louis, East London, Toamasina, Mahajanga, and Moroni.

2. For each port in the study, the analysis identified 11 matching ports of similar size and scope: 5 in Africa, 2 in Latin America, and 4 in Asia. The aggregate list of 110 ports represents the matched sample.

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